

CLAIMS

1. a conferencing system comprising:

(a) a plurality of participants;

(a) a like plurality of facilitator agents, each of said facilitator agents associated with a corresponding one of said plurality of participants, each said plurality of facilitator agents including.

(1) means for monitoring communication of a participant in the conferencing system;

(2) means for comparing the communication of the participant to a predetermined set of communication passages; and

(3) means for providing a prompt to a participant in the conferencing system in response to the means for comparing finding a match between the communication of a participant and one of the predetermined set of communication passages; and

(b) a like plurality of social agents each of said social agents associated with a corresponding one of said plurality of participants, each of said social agents including.

(1) means for monitoring relevant components of a design environment and suggesting appropriate actions to be taken by a participant; and

(c) means for learning how to effectively represent each individual of a plurality of individuals in the design environment.

2. The conferencing system of Claim 1 wherein said means for comparing the communication of the participant to a predetermined set of communication passages includes means for learning communication passages by being presented with one or more situation-action pairs which are classified in a rule-base such that said facilitator agent can proactively respond to future situations without user intervention.

3. The conferencing system of Claim 1 wherein said means for monitoring relevant components of a design environment and suggesting appropriate actions to be taken by a

3 participant includes means for monitoring and suggesting by being presented with one or
 4 more situation-action pairs which are classified in a rule-base such that said social agent can
 5 proactively respond to future situations without user intervention.

1 4. The conferencing system of Claim 1 wherein said social agents express an emotion
 2 of a participant.

1 5. The conferencing system of Claim 1 wherein said facilitator agents suggests a change
 2 of forum in response to a particular agenda item.

1 6. A facilitator agent for use in a conferencing system, the facilitator agent
 2 comprising:
 3 (a) means for monitoring communication of a participant in the conferencing system;
 4 (b) means for comparing the communication of the participant to a predetermined set of
 5 communication passages; and
 6 (c) means for providing a prompt to a participant in the conferencing system in
 7 response to the means for comparing finding a match between the communication of
 8 a participant and one of the predetermined set of communication passages..

1 7. The facilitator agent of Claim 6 further comprising means for evolving a reaction
 2 with the use of the conferencing system.

1 8. The facilitator agent of Claim 6 further comprising:
 2 means for coupling to a control mechanism; and
 3 means for establishing an appropriate control mechanism for a given forum setting..

1 9. The facilitator agent of Claim 6 further comprising means for building a rapport
 2 with a conferring participant through an interface technique that builds trust between the
 3 participant and the agent.

1 10. The facilitator agent of Claim 6 further comprising:
2 means for presenting a choice to a participant; and
3 means for accepting a decision from the participant.

1 11. The facilitator agent of Claim 6 further comprising means for presenting a
2 caricature representation that informs the user of its current process state.

1 12. The facilitator agent of Claim 11 wherein the process state corresponds to one of
2 thinking, suggesting, gratified, disappointed, or confused.

1 13. The facilitator agent of Claim 11 further comprising emotion representing means for
2 providing a suggestion in response to a decision and for showing expressions of sadness or
3 happiness dependent upon the reaction of the participant.

1 14. The facilitator agent of Claim 11 further comprising means for building thresholds
2 for decisions that may be taken without user intervention.

1 15. The facilitator agent of Claim 11 further comprising means for encoding user
2 preferences for agent autonomy such that said agent includes an indication of what
3 decisions the participant with which the agent is associated is willing to delegate to the
4 agent.

1 16. The facilitator agent of Claim 11 wherein the agent's decisions on process
2 interventions are based on the following aspects of the agent environment:

- 3 (a) a current topic's recommendation list;
4 (b) threshold levels indicating user preferences;
5 (c) an averaged record of the participation of each participant in a negotiation process; and
6 (d) a complete conversation model of an ongoing negotiation.

1 17. The facilitator agent of Claim 11 further comprising:

2 means for generating a vector representing the averages of the on-line time
3 consumed by each participant in a forum;

4 means for generating a vector representing the amount of recommendations
5 generated regarding a specific intent;

6 means for generating a vector representing the average time a participant in a forum
7 waits before given the right to speak; and

8 means for generating a vector representing the relevance of a topic to each
9 participant in a forum.

1 18. The facilitator agent of Claim 17 wherein a weight is assigned to each of the vectors
2 and the elements are summed..

1 19. The facilitator agent of Claim 18 wherein the weights are adjustable by a user.

1 20. The facilitator agent of Claim 6 wherein the facilitator agent distinguishes between:
2 (1) brainstorming/free control strategy, (2) a lecture control strategy; and (3) a chairperson
3 control strategy..

1 21. A social agent for use in a conferencing system, the social agent comprising:
2 means for monitoring relevant components of a design environment and suggesting
3 appropriate actions to be taken by a participant; and
4 means for learning how to effectively represent each individual of a plurality of
5 individuals in the design environment.

1 22. The social agent of Claim 21 further comprising:
2 means for becoming more familiar with a participant with which the agent is
3 associated;
4 means for cooperating with the agents of other participants in the conferencing
5 system to decide upon an appropriate meeting control scheme; and
6 means for reaching a consensus on a meeting process intervention.

1 23. A distributed meeting system comprising the steps of:
2 providing communication connectivity among distributed clients in a conference;
3 sharing information among clients participating in a meeting;
4 translating data in order to provide a coherent view of the data among a plurality of
5 clients; and
6 controlling work flow and communication process across a network.

1 24. The distributed meeting system as recited in claim 23 wherein the providing
2 communication connectivity among distributed clients in a conference step comprises the
3 steps of:
4 provide naming services to identify client locations; and
5 interacting with any network protocols to transmit data across the network between
6 the clients.

1 25. The distributed meeting system as recited in claim 23 wherein the sharing
2 information among clients participating in a meeting step comprises the step of translating
3 portions of data in order to provide a coherent view of the data among the clients.

1 26. The distributed meeting system as recited in claim 23 further comprising the step of
2 capturing and storing conversation elements exchanged during a meeting to provide a
3 technique for retaining group memory.

1 27. The distributed meeting system as recited in claim 23 wherein the controlling work
2 flow and communication process across a network step comprises the step of providing a
3 series of delay compensation techniques to synchronize inter-packet arrival time of
4 conference support tools.

28. The distributed meeting system as recited in claim 27 wherein the compensation
techniques includes a real time scheduling support by the conference support tools.

1 29. The distributed meeting system as recited in claim 28 wherein the compensation
2 techniques includes providing a queuing mechanism to enforce any real time constraints.

1 30. A distributed conferencing system comprising the steps of:
2 defining meeting agenda items and assigning a floor control strategy to each agenda
3 item, the floor control strategy determined by a meeting initiator;
4 automatically sending notification messages to the participants;
5 creating a forum server process with the appropriate membership and agenda;
6 maintaining meeting membership and temporal control of the meeting;
7 providing meeting notification, agenda traversal, and maintaining and traversing
8 meeting logs; and
9 processing messages from each client participating in the meeting; and
10 providing an agent for each participant, the agent providing queues to the participant in
11 response to messages.

1 31. The distributed conferencing system as recited in claim 30 wherein the creating a forum
2 server process step comprises the step of providing tokens to manipulate a speaker queue .

1 32. The distributed conferencing system as recited in claim 30 wherein the creating a forum
2 server process step comprises the step of ordering of a speaker queue based on a selected
3 control strategy.

1 33. The distributed conferencing system as recited in claim 32 wherein the control strategy
2 comprises a chairperson strategy, a brainstorming strategy, a lecture strategy and a dynamic
3 interaction strategy.

1 34. The distributed conferencing system as recited in claim 30 further comprising the step
2 documenting the meeting to provide a convenient snapshot of any proceedings for late
3 participants and for follow-up meetings to retain group memory by saving rationale knowledge

4 encoded in any speech exchange during the meeting.

1 35. The distributed conferencing system as recited in claim 34 wherein the documenting the
2 meeting step comprises the steps of indexing the conversation and providing conversation
3 browsing tools.

1 36. The distributed conferencing system as recited in claim 34 wherein the documenting the
2 meeting step comprises the steps of indexing any free-form conversation occurring in a typical
3 meeting event; and incorporating a semi-structured design including intent, recommendations
4 and justifications.

1 37. The distributed conferencing system as recited in claim 30 further comprising the steps
2 of providing a graph that forms a user interface and allows quick visualization of the meeting
3 proceedings; and browsing conversation data based on a single graph and, alternatively, on the
4 intersection of several graphs.

1 38. A conferencing system having a plurality of interlinked modules and servers
2 comprising:

3 a collaboration manager comprising a plurality of media drivers including a video
4 camera, a microphone and a display; and a message server to package data for transmission
5 over the network and enforce synchronization constraints during media play-back;

6 at least one forum server to control a conference among several clients and enforces
7 membership constraints; the forum server additionally logging all conference proceedings;

8 at least one forum manager to provide a specific control methodology and for
9 converting the control strategy; and

10 a name server to maintain a directory of any clients, forum managers and forum servers
11 within the conferencing system.

1 39. The conferencing system as recited in claim 38 wherein the collaboration manager
2 provides a client interface and maintains lists of available media resources and forum servers

3 available to the client.

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1 ~~39.~~ ^{40.} The conferencing system as recited in claim 38 wherein the collaboration manager
2 comprises a snapshot facility that allows each client to retain portions of the meeting as
3 personal notes.

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1 ~~40.~~ ^{41.} The conferencing system as recited in claim 38 wherein the collaboration manager
2 comprises conference controls associated with the forums in which the client is participating.

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1 ~~41.~~ ^{42.} The conferencing system as recited in claim 38 wherein the collaboration manager
2 provides a multimedia server with synchronization information, frame size, and delay and
3 error tolerances.

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1 ~~42.~~ ^{43.} The conferencing system as recited in claim 38 further comprising a media
2 synchronization receiver to reassemble a frame and ensure that play-back of the frame is
3 synchronized such that the frame reflects an initial input from a source.

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1 ~~43.~~ ^{44.} The conferencing system as recited in claim 42 wherein the media synchronization
2 receiver comprises a set of parameters, each parameter base on the synchronization technique
3 supplied by a corresponding media driver.

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1 ~~44.~~ ^{45.} The conferencing system as recited in claim 43 wherein each media driver also supplies
2 temporal relations with respect to the other media drivers in the receiver.

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1 ~~45.~~ ^{46.} The conferencing system as recited in claim 42 wherein multimedia frames transmitted
2 by a source participant are encoded with a frame sequence number and a time stamp; and
3 initial and final frames in a conversation are uniquely tagged to aid the synchronization
4 and scheduling mechanism.

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1 ~~46.~~ ^{47.} The conferencing system as recited in claim 45 wherein the receiver comprises a

2 scheduler to poll each queue and retrieve a list of complete frames.

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1 47. The conferencing system as recited in claim 38 wherein the least one forum server
2 comprises a subscription control process and a speaker control process.

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1 48. The conferencing system as recited in claim 47 wherein the subscription control
2 process comprises a predefined list of allowable conference participants; and
3 a forum maintainer with the right to revoke and grant membership to potential
4 members.

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1 49. A distributed conferencing system comprising:
2 a forum server to provide a communication control mechanism to allocate
3 communication channels among clients and to maintain meeting membership, meeting control
4 strategies, meeting agenda and meeting notification;
5 a name server to maintain a list of participants and a list of forums; and
6 a plurality of clients to provide a user interface to corresponding participants.

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1 50. The distributed conferencing system as recited in Claim 30 wherein each meeting
2 participant is also assigned particular access rights including agenda editing, chairperson
3 control, and control of the meeting proceedings.

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1 51. The distributed conferencing system as recited in Claim 31 wherein the meeting
2 proceeding